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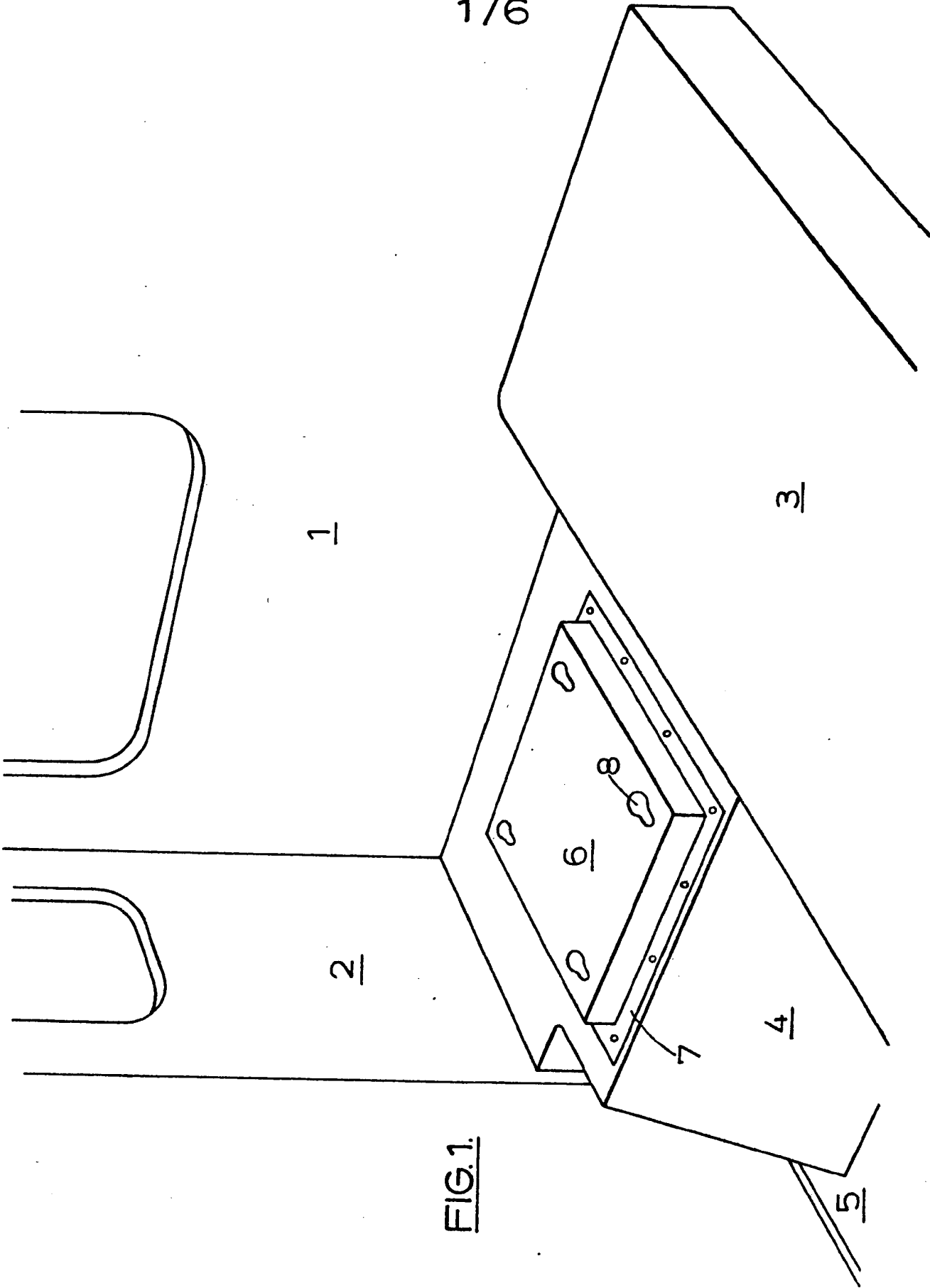


FIG. 1.

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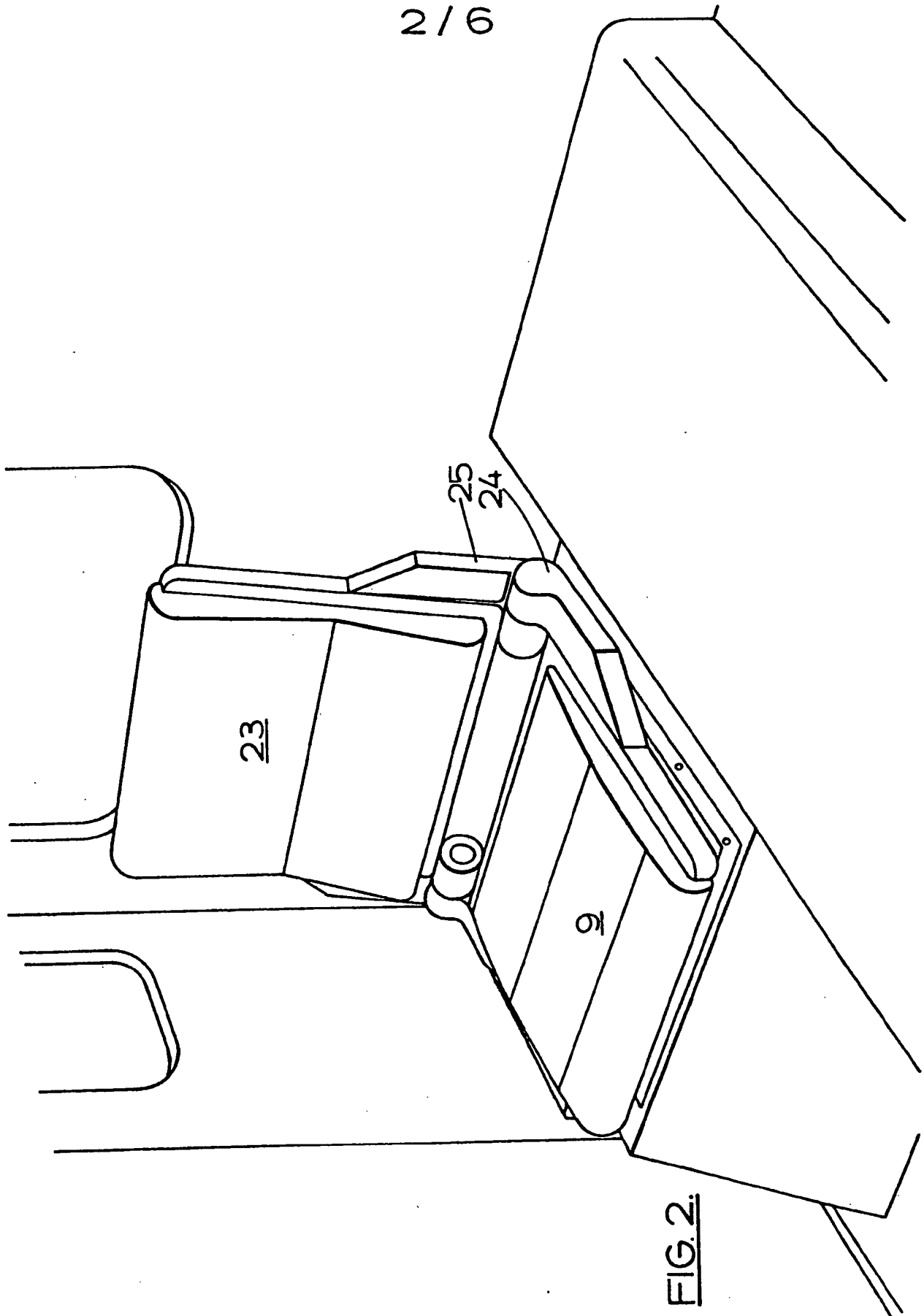


FIG. 2.

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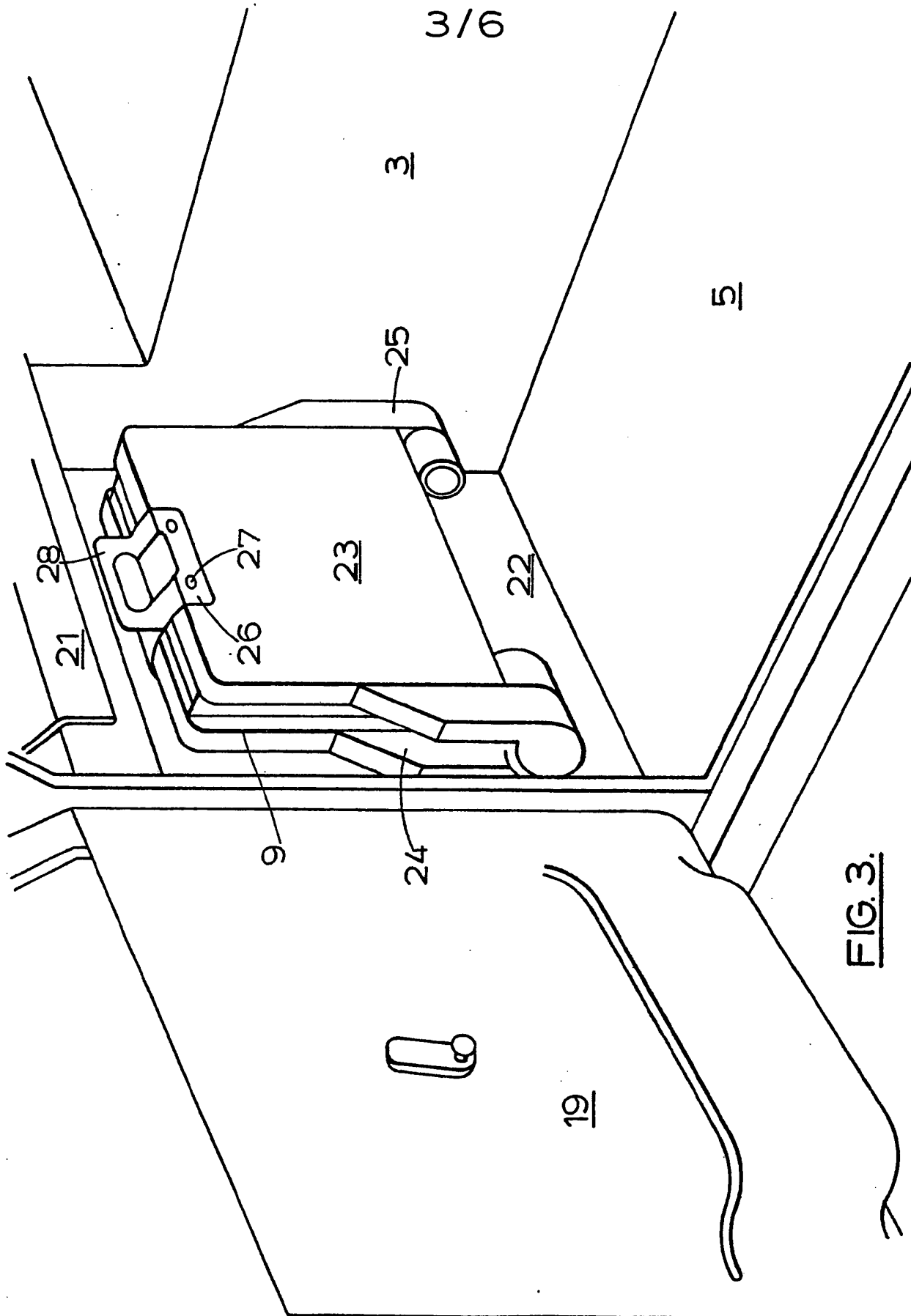
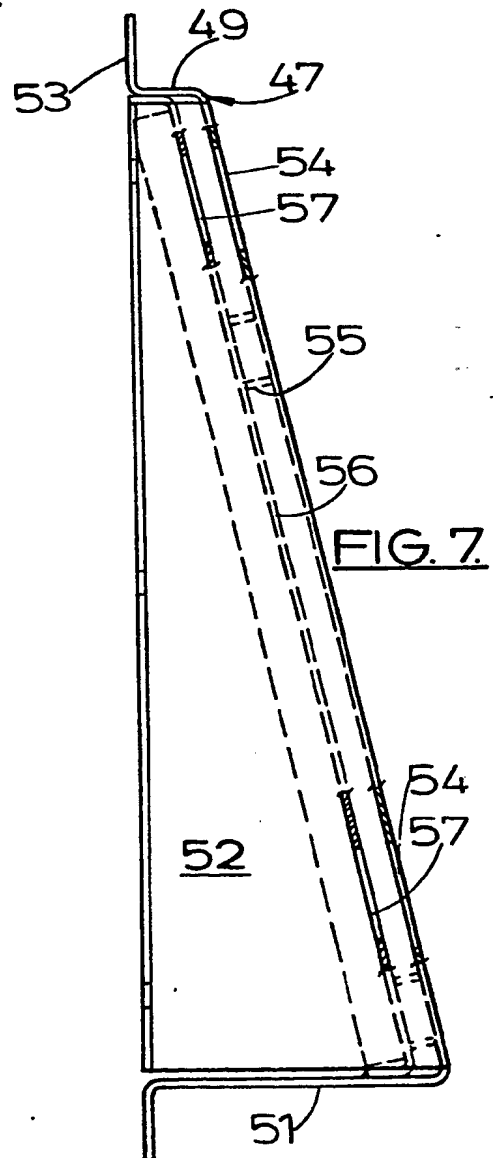
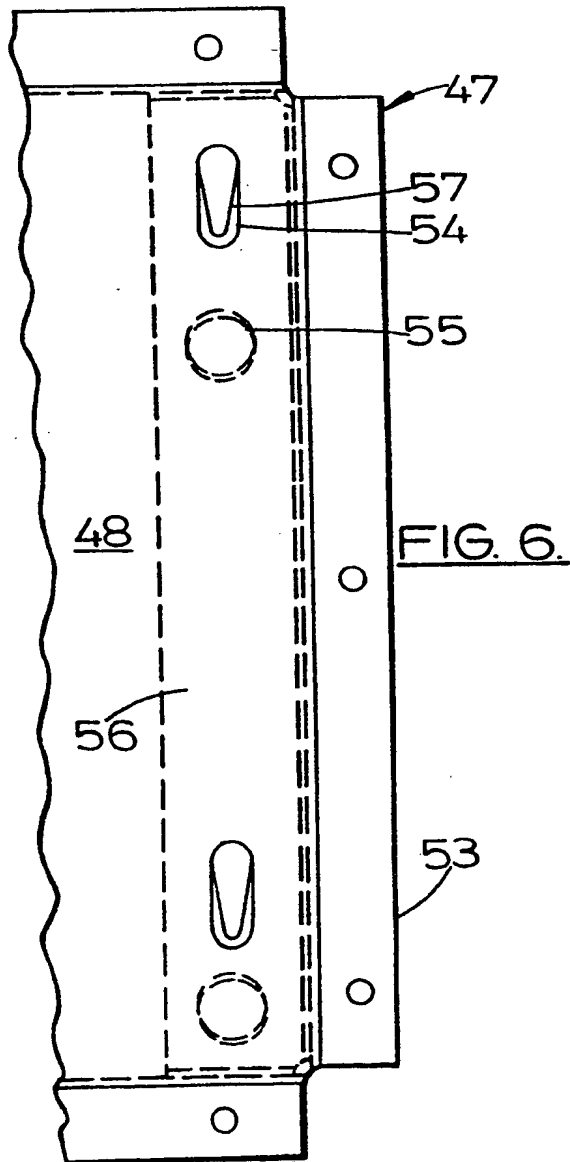
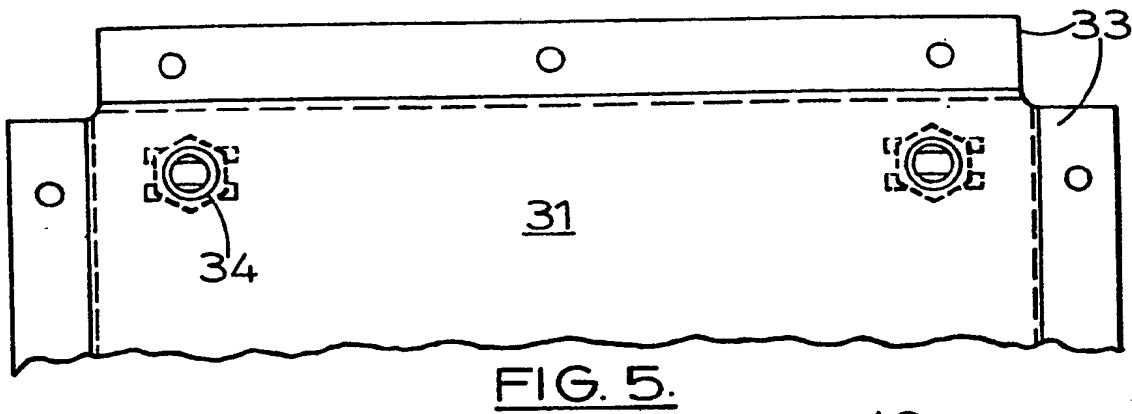
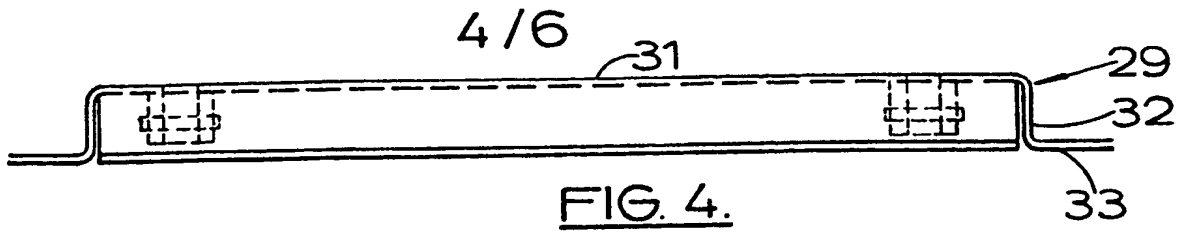


FIG. 3.



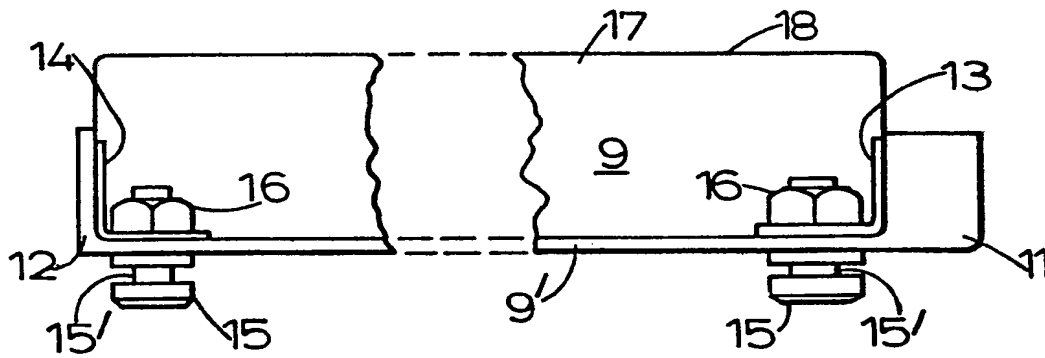


FIG. 8.

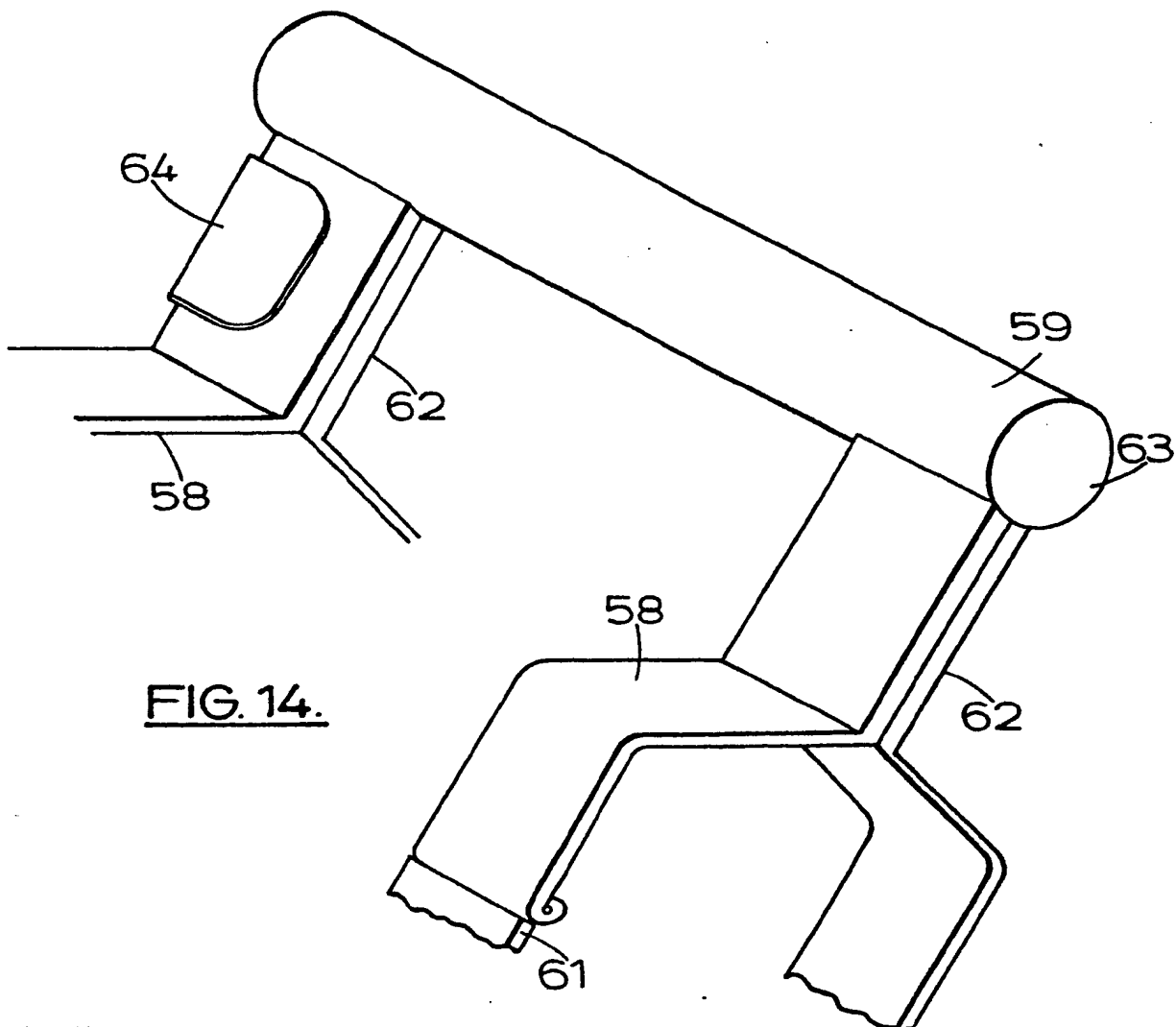


FIG. 14.

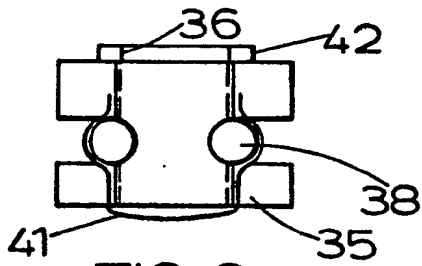


FIG. 9.

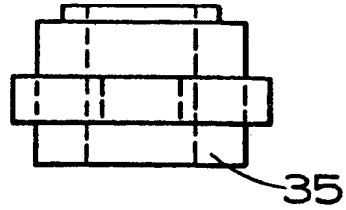


FIG. 10.

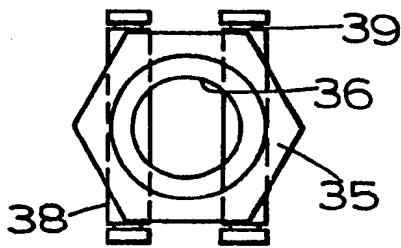


FIG. 11.

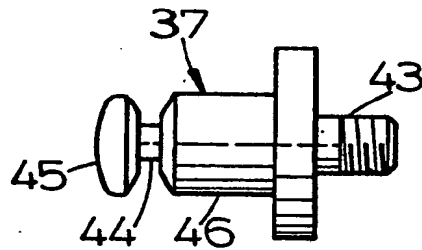


FIG. 12.

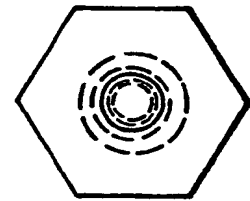


FIG. 13.

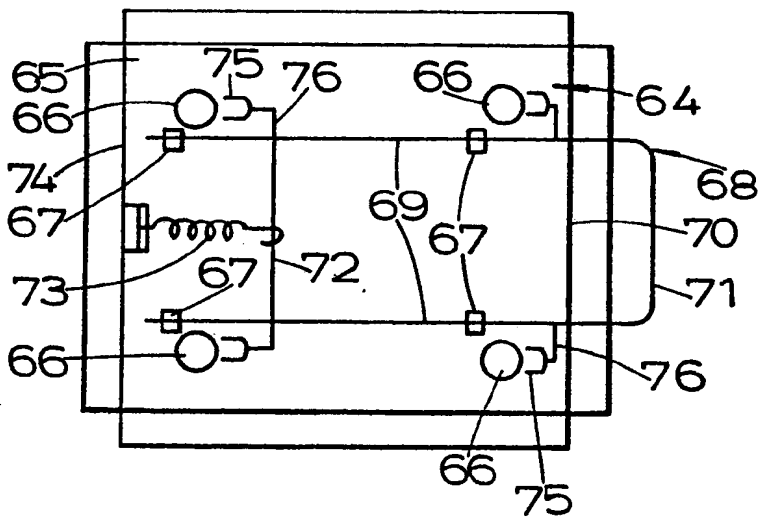


FIG. 15.

## SPECIFICATION

### Seats

This invention relates to seats, primarily, but not exclusive, intended for occasional use in vehicles.

It used to be customary for commercial vehicles to be manned by a driver and mate. However vehicle technical developments, developments in mechanical handling for loading and unloading vehicles, changes in the pattern of distribution of goods and economic pressures have resulted in a mate no longer being carried in a large proportion of commercial vehicles. Nevertheless vehicle builders have continued to provide the mate's seat alongside the driver's seat in the cabs of vehicles even though there are not many vehicles in which this seat is regularly used.

By this invention we aim to provide a seat which is capable of being fitted in a vehicle for use when required. When the seat is not required for use it may conveniently be stowed in a folded condition in the vehicle or removed from the vehicle. The seat of this invention is also capable of possibly being used in other locations in a vehicle, for example to provide seating in a van body.

The seat may be used in other applications where occasional or portable seating may be required, for example exhibition halls, sports stadiums and show grounds and even in boats and aircraft. The seat might be fitted, for example, to the roof or luggage rack of a car for viewing sporting events.

According to a first aspect the present invention consists in a seat comprising a seat portion and a back rest portion hingedly connected together, at least one of the seat portion and back rest portion having a base with a fastening member or members releasably engageable with fastening means at, or adapted to be provided at, a location where the seat is required to be used to secure the base at the location, and means adapted to retain the seat portion and back rest portion releasably in a folded position suitable for carrying or stowage of the seat when not in use.

The hinged connection between the seat portion and back rest portion may include stop means to located the back rest portion in an erected position for use. To hold the back rest portion in the erected position resistance, for example frictional resistance, or a spring-loaded detent mechanism, may be provided at the hinged connection.

Preferably a contoured seat pad and a contoured back rest pad are removably secured respectively to the seat portion and the back rest portion, the arrangement being such that the pads may be interchanged for use. The contours of the seat pad and back rest pad are conveniently complementary thereby to enable the seat and back rest portions to be folded substantially flat against one another in the folded position.

The means adapted to retain the seat portion

and back rest portion releasably in the folded position may co-operate with carrying means with which the seat may be provided for carrying the seat when not in use. The carrying means may comprise a first carrying handle hingedly connected to the front of the seat portion and a second carrying handle connected to the top of the back rest portion. The retaining means secures the carrying handles together when the seat and back rest portion are closed together.

Preferably the or each fastening member and the fastening means are manually engageable and releasable such that the seat can be fitted for use at, and removed from, the location without the aid of tools.

The or each fastening member may comprise a pin having a waisted portion with which the fastening means engages to lock the pin, and thereby the base, at the location.

There may be a plurality of pins extending from the base at least one of which serves as a fastening member, the other pin or pins serving to locate the base relative to the fastening means at the location for engagement of the or each fastening member with the fastening means.

The fastening means may comprise a mounting plate having for the or each fastening member pin a hole to receive the pin. Where there is an additional pin or pins to locate the base as aforesaid one or more additional holes may be provided in the mounting plate to receive the locating pin or pins as well. If the seat portion has the base the mounting plate is conveniently disposed horizontally or generally horizontally for the base and seat portion to be located upon it. Alternatively if it is the back rest portion which has the base the mounting plate may be inclined or vertically disposed for the base and back rest portion to be located upon it. The or each hole in the mounting plate may be arranged to allow the pin or respective pin to be slid along it and guide the pin into the position at which it is located for use of the seat.

According to a second aspect the invention comprises a vehicle including a seat in accordance with the first aspect of the invention hereinbefore defined.

Additional fastening means may be provided in the vehicle at a suitable location for storing the seat when it is not in use.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:

*Figure 1* is a perspective view of part of the inside of a vehicle cab showing fastening means of a seat in accordance with the invention,

*Figure 2* is similar to *Figure 1* and shows the seat secured by the fastening means, a back rest portion of the seat being erected for use,

*Figure 3* is a perspective view of part of the inside of a vehicle cab showing the seat in a folded and stowed position,

*Figure 4* is a side elevation of a mounting plate of the seat which may be used in a horizontal, inclined or generally vertical position for

supporting and locating the seat,

Figure 5 is a plan view of part of the mounting plate of Figure 4,

Figure 6 is a front elevation of part of a mounting plate intended primarily for use in an inclined or generally vertical position for supporting and locating the seat,

Figure 7 is a side elevation of the mounting plate of Figure 6,

Figure 8 is a section through the seat portion of the seat, illustrating two alternative constructions,

Figures 9 and 10 are front and side elevations of a socket,

Figure 11 is a plan view of the socket,

Figures 12 and 13 are respectively a side elevation and a plan view of a waisted pin,

Figure 14 is a perspective view of another form of carrying means of the seat, and

Figure 15 is a diagrammatic plan view of a further form of fastening means.

In this embodiment of the invention a seat is provided which is adapted to be mounted in a vehicle cab for use, typically a vehicle as shown in Figures 1 to 3 which comprises a rear wall 1, a side wall 2, an engine tunnel 3, a seat box 4 and a floor 5.

A shallow, rectangular-shaped, mounting plate 6 formed as a pressing has a peripheral flange 7 by which it is secured, as by bolts, by the flange to the seat box 4. The mounting plate 6 has a key hole slot 8 adjacent each corner. The slots 8 have the same orientation, axially of the vehicle, with their narrow parts extending towards the front of the vehicle. The mounting plate 6 and slots 8 comprise fastening means for securing the seat in the vehicle cab in the position for use.

Referring to Figure 8, a seat portion 9 of the seat has a base 9', which is shown alternatively at 11, 12 as being a moulding of structural foam plastics material or fibre reinforced plastics material respectively. The base 9' is reinforced with steel angle section 13, 14 drilled to receive flanged pins 15 adjacent each corner of the base so as to register with the circular part of the keyhole slots 8 in the mounting plate 6. The pins 15 have waisted portions 15' between their flanges. Weldnuts 16 are provided on the angle section 13, 14 to receive and secure the pins 15. The base 9' is upholstered with a foamed plastics material pad 17 moulded with a fabric covering 18 in situ. The pad may be secured to the base by adhesive. The pins 15 constitute fastening members which co-operate with the fastening keyhole slots 8 of the mounting plate 6, the pins initially being inserted into the circular parts of the slots and their waisted portions 15' subsequently being received into the narrow parts of the slots by bodily sliding the base 9' forwards on the mounting plate 6, thereby to retain the pins in engagement with the slots and so secure the seat in the vehicle cab for use. As the narrow parts of the keyhole slots 8 extend towards the front of the vehicle, it will be understood that the connection between the pins 15 and slots assures secure fastening of the seat to the mounting plate under

braking conditions of the vehicle, as the seat would tend to move forwards, thereby urging the pins away from the circular parts of the slots.

Referring now to figure 3, in which a door 19 of the cab is shown open, a facia 21 can be seen and a front wall 22 at which a second mounting plate, not shown, is provided which is similar to the mounting plate 6 described above with keyhole slots the narrow parts of which extend vertically downwards. This second mounting plate is provided as further fastening means for securing the seat in a stowed position when it is not required to be used. The pins 15 of the base 9' are entered in the keyhole slots and their waisted portions 15' engage in the narrow parts of the slots to secure the seat to the mounting plate. With the seat secured in the stowed position the space in the cab which had been occupied by the seat when in the position for use is made free for the carriage of goods, if required, or other uses.

The seat has a back rest portion 23, Figures 2 and 3, which is made in a similar manner to the seat portion 9 which has been described except that it does not require the pins 15 and weldnuts 16. The mouldings which respectively provide the base 9' of the seat portion and a frame of the back rest portion 23 include integral mating hinge portions 24, 25. Alternatively the hinges may be separate components which are secured, as by bolts, to the base and frame.

The hinge portions 24, 25 provide respectively a male and a female component of each hinge. Each hinge portion may include an abutment so arranged that when the back rest portion of the seat is in an erected position relative to the seat portion the two abutments of each hinge engage and act as a mechanical stop defining the erected position of the back rest portion.

The, or one of the, hinges may include a resistance to free relative movement of the seat and back rest portions. This may take the form of a spring-loaded plate on one of the hinge portions 24, 25 bearing on a friction disc on the other hinge portion. Alternatively the resistance may be provided by a yieldable mechanical stop. For example, each hinge portion may include a radially toothed member, which may be a plastics moulding. The toothed members of the two hinge portions are spring-loaded into meshing engagement. When one portion of the seat is moved relative to the other the spring-loading yields allowing the teeth of the members to ride over one another.

A flexible moulded plastics strap or clip 26 is secured to the base 9' and is releasably fastened, as by press fasteners 27, to the frame of the back rest portion 23, as seen in Figure 3. The strap 26 also includes a carrying handle 28 to facilitate handling of the folded seat.

An alternative mounting plate 29 and further forms of waisted pins will now be described with reference to Figures 4, 5 and 9 to 13. This mounting plate is again a generally rectangular metal pressing which has a horizontal top wall 31, depending sides 32 and flanges 33 which project

laterally outwards from the bottoms of the flanges and by which the mounting plate is secured horizontally to the floor of a vehicle, as by bolts, rivets or welding.

5 Adjacent each corner of the top wall 31 there is a hole 34 in which is secured a socket 35, Figures 9 to 11. The socket 35 comprises a short length of hexagon bar formed with a bore 36 to receive a  
10 waisted pin 37, Figures 12, 13. Slots are cut in opposite sides of the socket 35 in which are received two locking pins 38. The locking pins 38 have annular grooves 39 adjacent their ends to receive spring clips 41, Figure 9, at each end. The  
15 socket 35 has a spigot 42 which enters the hole 34 in the top wall 31 to locate it and the socket is secured to the top wall by welding.

Each waisted pin 37, as shown in Figures 12 and 13, is made from a short length of hexagon bar. A screw threaded shank 43 is formed at one  
20 end whereby the pin is able to be secured in a weldnut on the base of the seat portion of the seat. A waisted portion 44 connects a mushroom head 45 of the pin 37 to its main shank 46. The walls of the waisted portion 44 are parallel at the  
25 central section and are then inclined towards the head 45 and shank 46 respectively.

Four of the waisted pins 37 are fixed to the seat portion base, which may be in accordance with the base 9' described above with reference to  
30 Figure 8 of the accompanying drawings. The pins 37 depend from the seat base and are arranged to register with the bores 36 of the sockets 35 as the seat base is offered to the top wall 31 of the mounting plate 29. As the waisted pins are  
35 entered into the sockets 35 their mushroom heads 45 spread the locking pins 38 in the sockets against the bias exerted by the spring clips 41. When the heads 45 have passed the locking pins 38 the spring clips urge the locking pins to engage  
40 in the waisted portions 44 of the waisted pins 37 and so lock the seat to the mounting plate. The seat is securely located by engagement of the shanks 46 of the mounted pins 37 in the sockets 35. When it is required to remove the seat a lifting  
45 force is applied to the base whereby the inclined walls on the mushroom heads 45 cause the locking pins 38 to be spread and release the seat from the mounting plate.

The mounting plate 29 may also be used in an inclined or generally vertical position if desired. In  
50 this case the waisted pins 37 extend from the base of the back rest portion of the seat to engage in the sockets 35.

A mounting plate 47 intended primarily for use  
55 in an inclined or generally vertical position is shown in Figures 6 and 7. The mounting plate 47 is, again, a metal pressing. It has a generally rectangular front wall 48, a short upper wall 49, a longer lower wall 51 and generally triangular-  
60 shaped side walls 52. Flanges 53 allow the mounting plate to be secured to, for example, a side wall of a vehicle. Adjacent each corner of the front wall 48 a vertically extended slot 54 is provided, just wide enough to receive the  
65 mushroom head 45 and shank 46 of a respective

one of the waisted pins 37. The slots 54 are spaced so as to register with the waisted pins 37 extending from the base of the back rest portion. Spacers 55 are secured between the rear face of the front wall 48 and a plate 56 adjacent and  
70 secured to each side wall 52 behind the front wall. Each plate 56 is provided with a downwardly tapering slot 57 in alignment with each of the slots 54. The back rest portion is offered up to the  
75 mounting plate so that the waisted pins 37 are aligned with and enter into the top ends of the slots 54, 57. The spacers 55 ensure that when the shanks 46 of the waisted pins are fully entered the waisted portions 44 lie within the tapering slots  
80 57. A downward force applied to the back rest causes the waisted portions to wedge in the tapering slots 57, thereby locking the base of the back rest portion, and hence the seat, to the mounting plate. An upward force has to be applied  
85 to the back rest portion to lift the waisted pins 37 to the top ends of the slots 54, 57 before the seat can be removed from the mounting plate.

As shown in Figure 6 and 7, the mounting plate 47 is of a size to support one seat. It may be  
90 extended horizontally, if desired, and be provided with plates 56 and slots 54, 57 at suitable horizontally spaced intervals to enable it to support two or more seats. The flange 53 on one side wall 52 of the mounting plate may be  
95 stepped to facilitate fitting of a second mounting plate adjacent to the mounting plate. This arrangement may be used to make available seating accommodation in, for example, the body of a van along the sides thereof.

It will be appreciated that with suitable strength provided in the hinges between the seat portion  
100 and back rest portion of the seat, the same seat may be used for fitting to the horizontal mounting plate 29 of Figure 4 or to be inclined or generally vertical plate 47 of Figure 7. That is to say, that  
105 portion of the seat from which the waisted pins 37 extend becomes the seat portion when fitted to the horizontal mounting plate 29, and when that portion is fitted to the inclined or generally vertical  
110 mounting plate 47 it becomes the back rest portion and the other portion hinged to it becomes the seat portion.

Referring again to Figure 2, it will be seen that the foamed plastics pad 17 of the seat portion 9  
115 and the corresponding pad 23A of the back rest portion 23 are contoured to provide support for the thighs and for the lumbar region respectively of a person seated on the seat. These pads may be removably secured to their bases by, for example,  
120 Velcro (Registered Trade Mark) tape so that they can be readily interchanged when the seat is fitted to an inclined or generally vertical mounting plate, as 47, after having been previously used fitted to a horizontal mounting plate, as 29. This facility also  
125 assists cleaning of the pads and their replacement when worn or damaged. The contours of the pads are arranged to be complementary so that the seat can be folded flat, as seen in Figure 3.

In Figure 14 of the accompanying drawings  
130 there is shown another form of carrying means

which may be incorporated in the seat described. The carrying means comprises a pair of straps 58 of suitable rigid material, for example metal. These straps are cranked towards one end which is

5 secured, as by welding, to a length of longitudinally split tube 59. Towards the other end each strap is hinged to a plate 61 which is secured to the base of the seat portion of the seat. Similarly cranked

10 straps 62, but without hinges, have one end secured, as by welding, to a similar length of longitudinally split tube 63. The other ends of the straps 62 are secured to the base of the back rest portion of the seat.

A generally U-shaped clip 64 has one limb

15 pivotally secured to one of the straps 58. When the seat is folded the split tubes 59, 63 are held together by the clip 64 to provide a carrying handle, the clip embracing the adjacent ends of the straps 58, 62, as shown in Figure 14. The clip

20 64 is pivoted outwardly to release the straps and allow the seat to be erected.

It will be appreciated that alternative fastening means may be provided to hold either the tubes 59, 63 or the straps 58, 62, or the seat and back rest portions, together to facilitate stowing and

25 carrying of the seat when it is not in use.

A further form of the fastening means is shown diagrammatically in Figure 15 of the drawings which may be used to retain the seat by its seat portion 9 in its location for use. A mounting plate

30 64 generally similar to the mounting plate 29 shown in Figures 4 and 5 has a rectangular top wall 65 in which circular holes 66 are formed near each of its four corners. The holes 66 are of a diameter complementary to, and are positioned to receive, waisted pins, not shown, secured to the underside of the base of the seat portion. The

35 waisted pins may be similar in form to the waisted pins 37 shown in Figures 12 and 13 of the drawings. Slidably supported underneath the top wall 65 by guides 67 fixed to the top wall is a U-shaped operating member 68, made, for example, of tube or bar. Parallel legs 69 of the operating

40 member 68 engaged in the guides 67 extend from back to front of the mounting plate and through clearance holes, not shown, in a front wall 70 of the mounting plate. A cross part 71 of the operating member joining the legs 69 is disposed outside the mounting plate in front of the front

45 wall and forms a handle for manually sliding the operating member. Towards their rear ends the legs 69 are spanned by a tie rod 72 centrally to which is attached the forward end of a helical tension spring 73 which is anchored at its

50 rearward end to a rear wall 74 of the mounting plate. The spring 73 urges the operating member rearwardly to an operative position in which rearwardly directed forked ends 75 of angled locking elements 76 projecting from the legs 69

55 are in register with the holes 66. The operating member can be drawn forwards by the handle to a released position in which the forked ends 75 are out of register with the holes and the waisted pins of the seat portion base can be inserted into, and

60 removed from, the holes. When the waisted pins

are in the holes and the operating member is in its operative position the forked ends 75 of the locking elements engage with the waisted portions of the pins underneath the top wall 65 of the mounting plate and lock the pins in the holes, thereby securely retaining the seat on the mounting plate.

The mounting plate may be extended to support the seat portions of two or more seats. In

75 such an arrangement the operating member may be extended also to enable it to operate to retain all the seat portions to the mounting plate. Alternatively separate operating members may be provided for the individual seat portions.

## 80 CLAIMS

1. A seat comprising a seat portion and a back rest portion hingedly connected together, at least one of the seat portion and back rest portion having a base with a fastening member or

85 members releasably engageable with fastening means at, or adapted to be provided at, a location where the seat is required to be used to secure the base at the location, and means adapted to retain the seat portion and back rest portion releasably in

90 a folded position suitable for carrying or stowage of the seat when not in use.

2. A seat as claimed in claim 1 wherein a contoured seat pad and a contoured back rest pad are removably secured respectively to the seat

95 portion and the back rest portion, the arrangement being such that the pads may be interchanged for use.

3. A seat as claimed in claim 2 wherein the contours of the seat pad and the back rest pad are complementary whereby the seat and back rest portions may be folded substantially flat against one another in the folded position.

4. A seat as claimed in any preceding claim wherein the or each fastening member and the fastening means are manually engageable and releasable such that the seat can be fitted for use at and removed from the location without the aid of tools.

5. A seat as claimed in any preceding claim

110 wherein the or each fastening member comprises a pin having a waisted portion with which the fastening means engages to lock the pin, and thereby the base, at the location.

6. A seat as claimed in claim 5 wherein the base has at least one further pin which locates the base relative to the fastening means at the location for engagement of the or each fastening member with the fastening means.

7. A seat as claimed in claim 5 or claim 6

120 wherein the fastening means comprises a mounting plate having for the or each fastening member pin an elongated hole which is arranged to receive the or each respective fastening member pin at its one end and allows the pin to be moved to its opposite end at which position of the pin retaining means engages with the waisted portion of the pin and prevents the pin from being detached from the hole.

8. A seat as claimed in claim 7 wherein the

elongated hole is narrower at said opposite end than at said one end and portions of the mounting plate at opposite sides of the narrower end engage with the waisted portion of the fastening member pin to retain the pin in the hole.

9. A seat as claimed in claim 7 wherein the or each fastening member pin protrudes from the or each respective elongated hole and the waisted portion is at the protruding part of the pin, and the retaining means comprises at the mounting plate, in register with the or each elongated hole, a second hole which receives the waisted portion of the or each respective fastening member pin and has a tapered elongation towards the said opposite end of the elongated hole, the elongated hole serving to locate and guide the fastening member pin for sliding movement along that hole and the second hole, and the second hole by its tapered elongation serving to trap the waisted portion of the fastening member pin therein as the pin is slid to said opposite end of the elongated hole and prevent the pin from being withdrawn from the holes.

10. A seat as claimed in claim 5 or claim 6 wherein the fastening means comprises a mounting plate having for the or each fastening member pin a hole which is arranged to receive the or each respective fastening member pin, and resilient locking means associated with the hole which engages with the waisted portion to retain

the fastening member pin in the hole.

11. A seat as claimed in any of claims 7 to 10 wherein the mounting plate is provided with a plurality of the holes whereby one or more additional seats may be fitted to and releasably retained by their bases to the mounting plate for use.

12. A vehicle including a seat as claimed in any preceding claim.

13. A vehicle as claimed in claim 12 including first fastening means with which the fastening member or members is or are engageable at the location where the seat is secured for use, and second fastening means engageable with the seat at a stowed position for the seat.

14. A seat substantially as described herein with reference to and as illustrated by Figures 1 to 3 and 8 of the accompanying drawings.

15. A seat substantially as described herein with reference to and as illustrated by Figures 1 to 3 and 8 as modified by Figures 4, 5 and 9 to 14 of the accompanying drawings.

16. A seat substantially as described herein with reference to and as illustrated by Figures 1 to 3 and 8 as modified by Figures 6, 7 and 9 to 14 of the accompanying drawings.

17. A seat substantially as described herein with reference to and as illustrated by Figures 1 to 3 and 8 as modified by Figure 15 of the accompanying drawings.